Name: _____     Date: _____
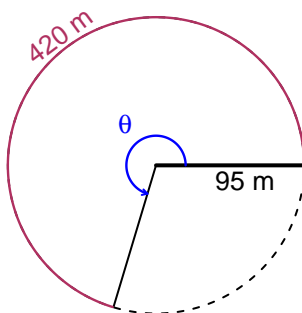
# Trig Final (TEST v689)

- You can use a calculator (like Desmos)
- You should have a unit-circle with special angles and coordinates marked.

## Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The radius is 95 meters. The arc length is 420 meters. What is the angle measure in radians?
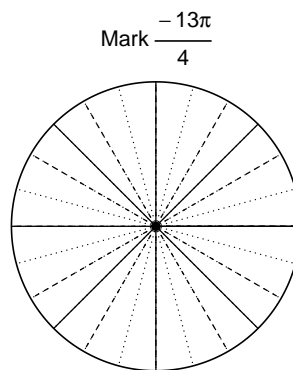


## Question 2

Consider angles $\frac{23\pi}{6}$ and $\frac{-13\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(\frac{23\pi}{6}\right)$ and $\sin\left(\frac{-13\pi}{4}\right)$ by using a unit circle (provided separately).



Mark $\frac{23\pi}{6}$

Find cos(23π/6)



Mark $\frac{-13\pi}{4}$
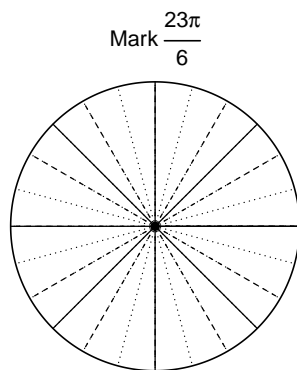
Find sin(−13π/4)

**Question 3**

If $\sin(\theta) = \frac{-35}{37}$, and $\theta$ is in quadrant IV, determine an exact value for $\cos(\theta)$.

**Question 4**

A mass-spring system oscillates vertically with a midline at $y = 2.42$ meters, an amplitude of 6.15 meters, and a frequency of 8.95 Hz. At $t = 0$, the mass is at the midline and moving up. Write an equation to model the height ($y$ in meters) as a function of time ($t$ in seconds).